

DRAFT

Hughes Mountain

Natural Area

Ten-Year Area Management Plan

FY 2016-2025



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OVERVIEW

- **Official Area Name:** Hughes Mountain Natural Area, # 8213
- **Year of Initial Acquisition:** 1982
- **Acreage:** 462 acres
- **County:** Washington
- **Division with Administrative Responsibility:** Forestry
- **Division with Maintenance Responsibility:** Forestry
- **Statements of Purpose:**
 - A. Strategic Direction**

Manage the high quality glade and woodland communities to preserve biodiversity while providing opportunities for diverse public use.
 - B. Desired Future Condition**

The desired future condition of Hughes Mountain Natural Area (NA) is a healthy, diverse and sustainable mosaic of glades and woodlands that maintain species diversity and provide opportunities for the public to study, hike, and enjoy the natural area.
 - C. Federal Aid Statement**

N/A

GENERAL INFORMATION AND CONDITIONS

I. Special Considerations

- A. Priority Areas:** St. Francois Knobs Conservation Opportunity Area, Buford Terrestrial Conservation Opportunity Area, Big River Fisheries Priority Watershed, St. Francois Knobs Priority Forest Landscape
- B. Natural Areas:** Hughes Mountain NA is a representation of an igneous (rhyolite) glade/woodland natural community mosaic that characterizes much of the St. Francois Mountains region. An uncommon geologic feature, polygonal jointing, is dramatically represented at the crest of Hughes Mountain. These multi-sided columns of rhyolite are known locally as Devil's Honeycomb.

II. Important Natural Features and Resources

- A. Species of Conservation Concern:** Species of conservation concern are known from this area. Area Managers should consult the Natural Heritage Database annually and review all management activities with the Natural History Biologist.
- B. Caves:** None
- C. Springs:** None
- D. Other:** Occurs in the St. Francois Igneous Glade/Oak Forest Knobs Landtype Association. This landtype association consists of low hills associated with pre-

Cambrian igneous formations. Historically, glade/woodland complexes were interspersed with an oak woodland matrix (Nigh & Schroeder, 2002).

III. Existing Infrastructure

- 1 parking lot
- Devil's Honeycomb Trail (0.7 mile – one way)

IV. Area Restrictions or Limitations

- A. Deed Restrictions or Ownership Considerations:** None
- B. Federal Interest:** Federal funds may be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.
- C. Easements:** GTE Midwest Incorporated telephone line easement (since 1998)
- D. Cultural Resources Findings:** No known cultural resources.
- E. Hazards and Hazardous Materials:** None observed.
- F. Endangered Species:** None
- G. Boundary Issues:** None
- H. Other:** Follow all guidelines in the *Missouri Natural Areas Procedures Manual*.

MANAGEMENT CONSIDERATIONS

V. Terrestrial Resource Management Considerations

Challenges and Opportunities:

- 1) Challenge: Altered historic fire regime.
 - Abundant eastern red cedar and blackjack oak are invading glades and woodlands.
 - Shift in species composition from fire adapted tree species (e.g., oaks) to fire intolerant species such as sugar maple in woodlands.
 - Increasing density of trees in woodlands resulting in increased shade to the woodland floor.
 - Decrease in diversity and abundance of ground layer herbaceous vegetation.
- 2) Challenge: Access of personnel and equipment for natural resources management.
 - Mile long hiking trail through steep rocky terrain to access mountaintop glades.

- 3) Opportunity: Enhance wildlife habitat and maintain biological diversity by maintaining open glades and woodlands with canopy gaps allowing sunlight to reach the ground level herbaceous layer.
- 4) Opportunity: Monitor occurrence and relative abundance of herbaceous vegetation and wildlife.

Management Objective 1: Maintain healthy glades with management emphasis on biological diversity.

Strategy 1: Monitor glades for invasive species. If invasive species are found, take necessary action to eliminate or keep the threat at an acceptable level (Forestry, Wildlife).

Strategy 2: Create a figure-eight loop fire-line that would enhance access to glades for management and be used as a fire-line during prescribed burns (Forestry, Wildlife).

Strategy 3: Utilize prescribed fire and other management tools to maintain glade openings and suppress invasion by eastern red cedar while stimulating herbaceous vegetation in glades (Forestry, Wildlife).

Strategy 4: Remove most eastern red cedar, blackjack oak, and other trees that are not controlled by prescribed fire, but would have historically been controlled by wildfire (Forestry, Wildlife).

Management Objective 2: Maintain healthy woodlands with management emphasis on biological diversity.

Strategy 1: Monitor woodlands for invasive vegetation. If invasive species are found, take necessary action to eliminate or keep the threat at an acceptable level (Forestry, Wildlife).

Strategy 2: Create a figure-eight loop fire-line that would enhance access to woodlands for management and be used as a fire-line during prescribed burns. This is the same fire-line as described under Management Objective 1, Strategy 2 for glades (Forestry, Wildlife).

Strategy 3: Reduce tree stocking in dry woodlands to a range of 20-50 square feet basal area per acre of suitable tree species (e.g. blackjack oak, post oak, eastern red cedar) to provide adequate sunlight for herbaceous ground layer vegetation. Reduce tree stocking in more mesic woodlands to a range of 50-80 square feet basal area per acre of suitable tree species (e.g. white oak, shagbark hickory, northern red oak) to provide adequate sunlight for herbaceous vegetation and desirable tree regeneration. Prior to reducing the tree stocking or conducting other management activities in the woodlands, conduct a forest inventory when the size of the woodland is suitable to inventory (Forestry, Wildlife).

Strategy 4: Utilize prescribed fire in woodlands to stimulate herbaceous vegetation and increase oak regeneration (Forestry, Wildlife).

Management Objective 3: Monitor biological diversity over time.

Strategy 1: Maintain list of all known species occurrences on the area with dates of documentation. This may be coordinated by the Natural History Biologist or interested non-profit groups (Wildlife).

Strategy 2: Monitor the presence and relative abundance of species of conservation concern on the area every five years, or more frequently. This may be coordinated by the Natural History Biologist and available partners (Wildlife).

VI. Aquatic Resource Management Considerations

Challenges and Opportunities:

- 1) Opportunity: Hughes Mountain NA contributes to the Big River Watershed by providing a healthy and adequate headwater stream habitat.

Management Objective 1: Maintain healthy habitat to protect the watershed.

Strategy 1: Monitor density of trees in drainages and ensure adequate stocking is maintained to minimize soil erosion. If stocking is inadequate, exclude fire from riparian corridors until seedlings are allowed to recruit into the overstory and become resistant to top kill by prescribed fire (Forestry).

VII. Public Use Management Considerations

Challenges and Opportunities:

- 1) Challenge: Variety and intensity of public use requires regular enforcement and area maintenance.
- 2) Challenge: Illegal use of this area occurs, including collection of flora and fauna.
- 3) Opportunity: The area offers a variety of recreational opportunities such as hiking, nature viewing, geologic observation and hunting.
- 4) Opportunity: The area offers opportunity to build relationships with neighboring land owners.

Management Objective 1: Deter illegal activities from the area.

Strategy 1: Post area regulations and informative signage at the parking lot to encourage users to report illegal activities such as poaching, collection of rocks, plants and wildlife; as well as post contact information to report violations (Forestry, Wildlife).

Strategy 2: Perform regular area inspections and patrols (Protection).

Strategy 3: Utilize open communication with Conservation Agents about activities on area and address issues as they are reported (Forestry, Wildlife, Protection).

Management Objective 2: Provide public hunting and wildlife viewing opportunities.

Strategy 1: Maintain healthy habitat for a range of plants and animals (Forestry, Wildlife).

Strategy 2: Ensure that public hunting opportunities are advertised in the annual hunting regulation booklets, on Missouri Atlas Database and on area brochure (Forestry).

Management Objective 3: Maintain parking lot and maintain/enhance the trail system to provide aesthetics, utility and high quality hiking opportunities to the public.

Strategy 1: Perform routine maintenance on trails and parking lot (Forestry, Design and Development).

Management Objective 4: Cultivate and maintain a good working relationship with neighboring land owners.

Strategy 1: Work with neighbors to minimize any boundary, trespass or other issues affecting Hughes Mountain NA (Forestry, Wildlife).

Strategy 2: Promote habitat management on neighboring landowner properties. This will be done by the Resource Forester and Private Land Conservationist in Washington County (Forestry, Private Land Services).

VIII. Administrative Considerations

Challenges and Opportunities:

- 1) Opportunity: Communicate to area-users up-to-date information about this area.

Management Objective 1: Evaluate opportunities to accomplish more habitat management on the area.

Strategy 1: Cooperate on joint Forestry/Wildlife Division work days to implement habitat management strategies on the area (Forestry, Wildlife).

Management Objective 2: Ensure public information about the area is accurate and up-to-date.

Strategy 1: Perform annual review of Missouri Atlas Database and area brochures (Forestry).

Management Objective 3: Maintain well marked, accurate boundary lines and area signs.

Strategy 1: Paint boundary trees and maintain signs along boundary lines every five years or as needed (Forestry).

Strategy 2: Paint and maintain area signs (Forestry).

Lands Proposed For Acquisition:

When available, adjacent land may be considered for acquisition from willing sellers. Tracts that improve area access, provide public use opportunities, contain unique natural communities and/or species of conservation concern, or meet other Department priorities, as identified in the annual Department land acquisition priorities, may be considered.

MANAGEMENT TIMETABLE

Strategies are considered ongoing unless listed in the following table:

	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Terrestrial Resources Management										
<i>Objective 1</i>										
Strategy 2	X	X								
<i>Objective 2</i>										
Strategy 2	X	X								
<i>Objective 3</i>										
Strategy 2		X					X			
Administrative Considerations										
<i>Objective 3</i>										
Strategy 1					X					X

APPENDICES

Area Background:

Hughes Mountain NA, in southern Washington County, is a combination of igneous glades and three types of forest. The area was designated a natural area in 1982 to protect its unique geology and natural communities.

The igneous knob is named for John Hughes, the first European settler in the area, who arrived in 1810. The land stayed in the Hughes family until purchased by the Department in 1982.

The Precambrian rock outcrops on Hughes Mountain are among the oldest exposed rocks in the United States (approximately 1.5 billion years old). The rocks were once liquefied by ancient volcanoes associated with the St. Francois Mountains. Some of the molten rock contracted and cracked as it cooled to create multi-sided columns. A rhyolite formation, known locally as the Devil's Honeycomb, is one of Missouri's geologic wonders, and is the highest point on Hughes Mountain.

Two-thirds of the area is wooded. The forest is dominated by post and white oaks with areas of stunted specimens of blackjack oak and black hickory.

The area's glades are natural openings on western or southern slopes that are dominated by native grasses and a variety of wildflowers. Glades occur where the soils are extremely thin and usually include areas of exposed bedrock. The thin soils, combined with the south and west exposure create a uniquely harsh habitat. Glade plants include little bluestem, broomsedge, poverty grass, the small but colorful flame flower, prickly pear cactus, yellow star grass, spiderwort and wild hyacinth. Animals often found on these glades include several species of lizards, lichen grasshoppers and prairie warblers. Exposed rocks within glades are often covered with a variety of lichens.

Current Land and Water Types:

Land/Water Type	Acres	% of Area
Woodland	332	72
Glade	120	26
Old Field	10	2
Total	462	100

References:

Nigh, T. A., & Schroeder, W. A. (2002). *Atlas of Missouri ecoregions*. Missouri: Missouri Department of Conservation.

Missouri Department of Conservation. (2010). *Missouri Natural Areas procedures manual version 1.0*.

Maps:

Figure 1: Area Map

Figure 2: Aerial Map

Figure 3: Topographic Map

Figure 4: Current Vegetation Map

Figure 5: Easement Map

Figure 1: Area Map

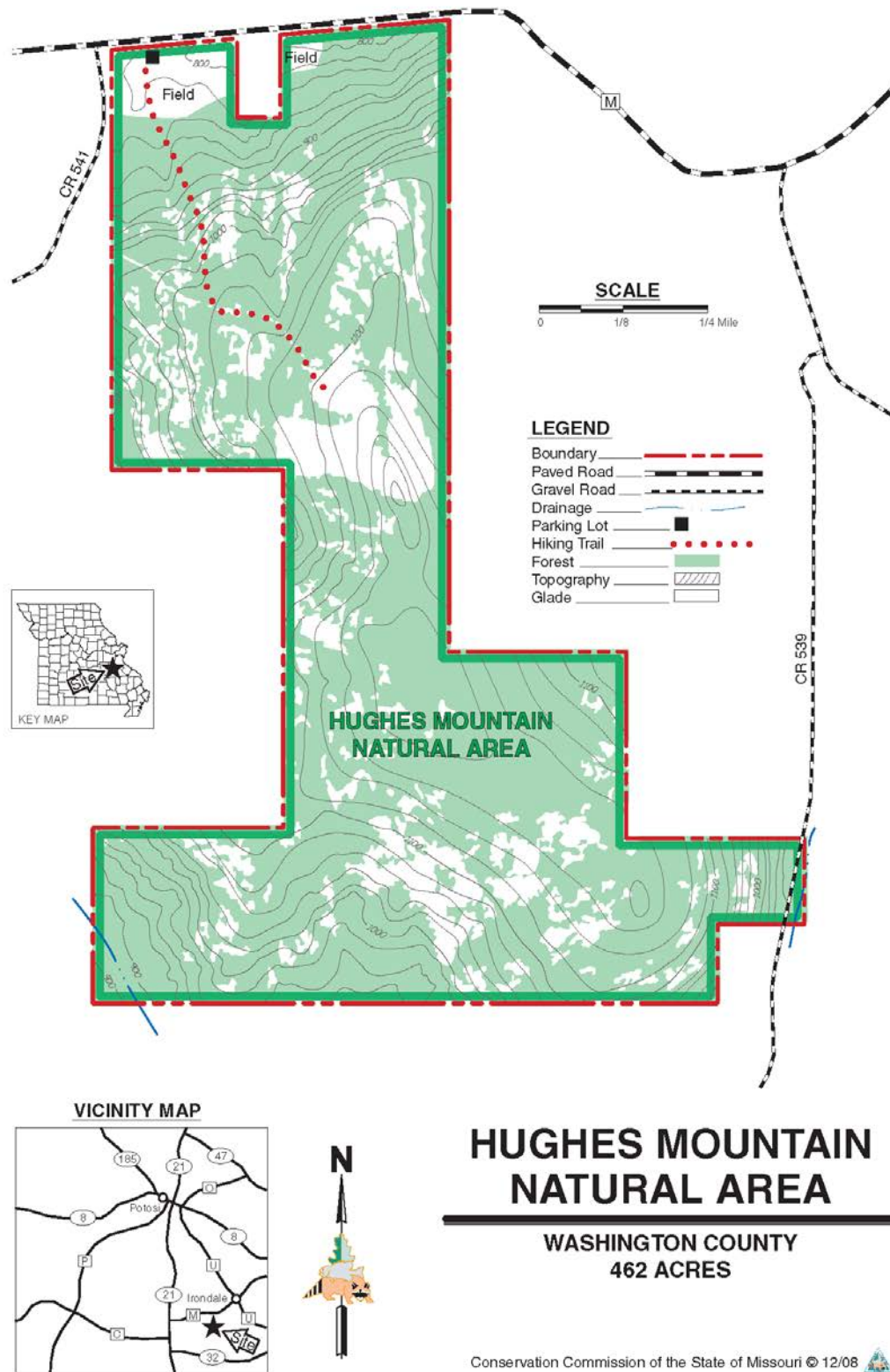


Figure 2: Aerial Map



Figure 3: Topographic Map

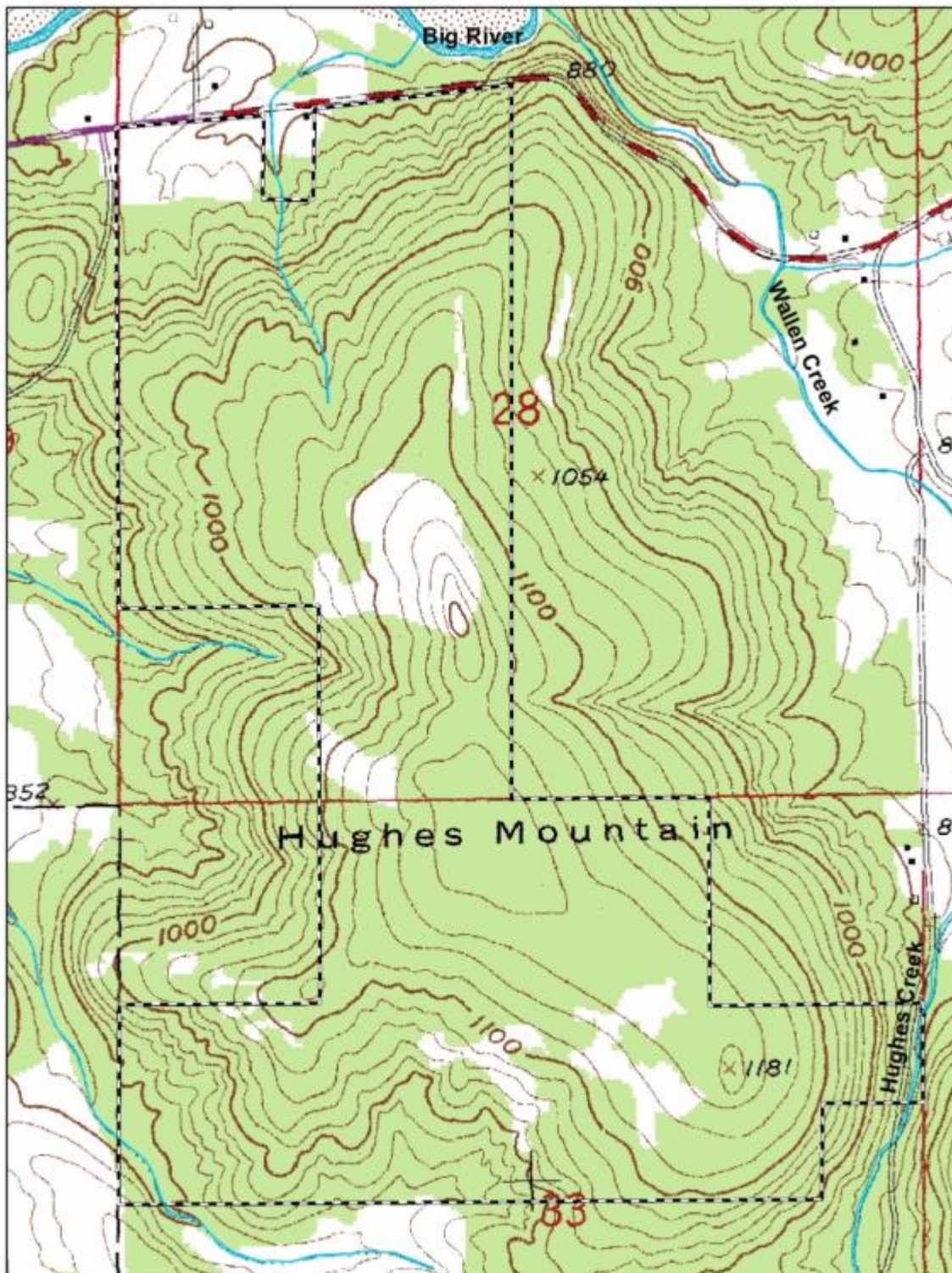
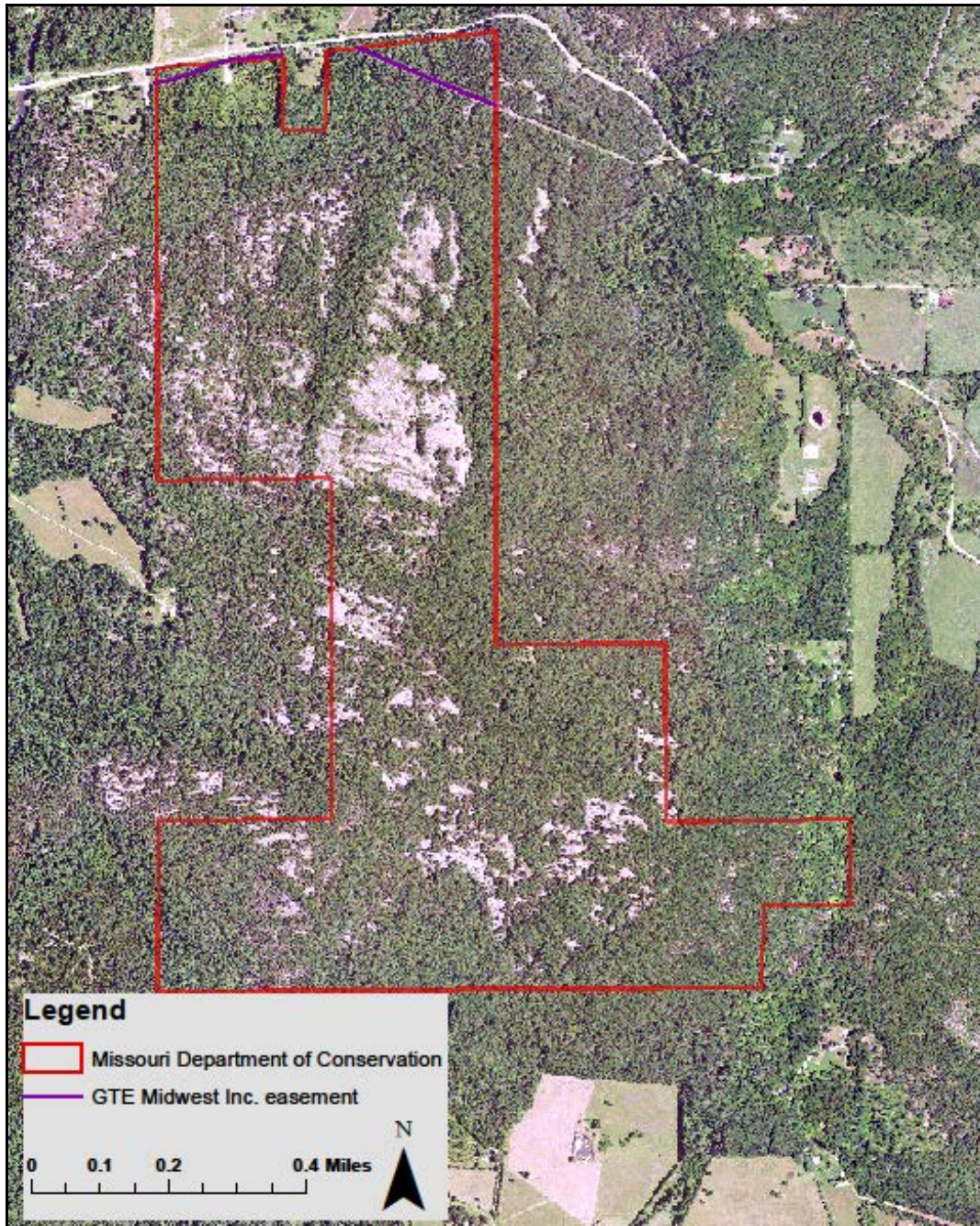


Figure 4: Current Vegetation Map



Figure 5: Easement Map



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